SEQUENCE LISTING

<110> Finlay, B. Brett
Kenny, Brendan
DeVinney, Rebekah
Stein, Marcus

<120> HOST RECEPTOR FOR PATHOGENIC BACTERIA

<130> 482112.402

<140> US 09/189,415
<141> 1998-11-10

<160> 13

<170> FastSEQ for Windows Version 4.0

<210> 1
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<212> DNA
<213> Escherichia coli

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cgtacgaaaa tactggccaa attagaccca gacaatcatg gaggacgtca acccaaggac 660
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gcagatcctg gttatagcgt tattcagaat ttttcaggga gcggcccagt taccggaagg 1560
ttaataggaa ctccagggca aggtatccaa agtacttatg cgcttctggc aaacagcggc 1620
ggattgcgtt taggtatggg aggattaacg agtggtggcg agacggcagt aagttctgta 1680
aatgccgcac caacgcaggg accagtacgt ttcgtttaaa tatatctgtg agtatttagt 1740

tgaggttggg gtggggtggg ggggcgtttt actagcgtta atgtttcaga gaacaacgtt 1800
gcagcatggg taactcttga acttctgtta ttataatcaa ttaagagaaa ttataatgtc 1860
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<210> 2
<211> 549
<212> PRT
<213> Escherichia coli

<220>
<221> UNSURE
<222> (314)...(314)
<223> Xaa = Any amino acid

<400> 2

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            20                  25                  30
Gly Thr Gly His Leu Ile Ser Ser Thr Gly Ala Leu Gly Ser Arg Ser
        35                  40                  45
Leu Phe Ser Pro Leu Arg Asn Ser Met Ala Asp Ser Val Asp Ser Arg
    50                  55                  60
Asp Ile Pro Gly Leu Pro Thr Asn Pro Ser Arg Leu Ala Ala Ala Thr
65                  70                  75                  80
Ser Glu Thr Cys Leu Leu Gly Gly Phe Glu Val Leu His Asp Lys Gly
                85                  90                  95
Pro Leu Asp Ile Leu Asn Thr Gln Ile Gly Pro Ser Ala Phe Arg Val
            100                 105                 110
Glu Val Gln Ala Asp Gly Thr His Ala Ala Ile Gly Glu Lys Asn Gly
        115                 120                 125
Leu Glu Val Ser Val Thr Leu Ser Pro Gln Glu Trp Ser Ser Leu Gln
    130                 135                 140
Ser Ile Asp Thr Glu Gly Lys Asn Arg Phe Val Phe Thr Gly Gly Arg
145                 150                 155                 160
Gly Gly Ser Gly His Pro Met Val Thr Val Ala Ser Asp Ile Ala Glu
                165                 170                 175
Ala Arg Thr Arg Ile Leu Ala Lys Leu Asp Pro Asp Asn His Gly Gly
            180                 185                 190
Arg Gln Pro Lys Asp Val Asp Thr Arg Ser Val Gly Val Gly Ser Ala
        195                 200                 205
Ser Gly Ile Asp Asp Gly Val Val Ser Glu Thr His Thr Ser Thr Thr
    210                 215                 220
Asn Ser Ser Val Arg Ser Asp Pro Lys Phe Trp Val Ser Val Gly Ala
225                 230                 235                 240
Ile Ala Ala Gly Leu Ala Gly Leu Ala Ala Thr Gly Ile Ala Gln Ala
                245                 250                 255
Leu Ala Leu Thr Pro Glu Pro Asp Asp Pro Thr Thr Thr Asp Pro Asp
            260                 265                 270
Gln Ala Ala Asn Ala Ala Glu Ser Ala Thr Lys Asp Gln Leu Thr Gln
        275                 280                 285
Glu Ala Phe Lys Asn Pro Glu Asn Gln Lys Val Asn Ile Asp Ala Asn
    290                 295                 300
Gly Asn Ala Ile Pro Ser Gly Glu Leu Xaa Asp Asp Ile Val Glu Gln
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305                 310                 315                 320
Ile Ala Gln Gln Ala Lys Glu Ala Gly Glu Val Ala Arg Gln Gln Ala
                325                 330                 335
Val Glu Ser Asn Ala Gln Ala Gln Gln Arg Tyr Glu Asp Gln His Ala
            340                 345                 350
Arg Arg Gln Glu Glu Leu Gln Leu Ser Ser Gly Ile Gly Tyr Gly Leu
        355                 360                 365
Ser Ser Ala Leu Ile Val Ala Gly Gly Ile Gly Ala Gly Val Thr Thr
    370                 375                 380
Ala Leu His Arg Arg Asn Gln Pro Ala Glu Gln Thr Thr Thr Thr Thr
385                 390                 395                 400
Thr His Thr Val Val Gln Gln Gln Thr Gly Gly Ile Pro Gln His Lys
                405                 410                 415
Val Ala Leu Met Pro Gln Glu Arg Arg Arg Phe Ser Asp Arg Arg Asp
            420                 425                 430
Ser Gln Gly Ser Val Ala Ser Thr His Trp Ser Asp Ser Ser Ser Glu
        435                 440                 445
Val Val Asn Pro Tyr Ala Glu Val Gly Gly Ala Arg Asn Ser Leu Ser
    450                 455                 460
Ala His Gln Pro Glu Glu His Ile Tyr Asp Glu Val Ala Ala Asp Pro
465                 470                 475                 480
Gly Tyr Ser Val Ile Gln Asn Phe Ser Gly Ser Gly Pro Val Thr Gly
                485                 490                 495
Arg Leu Ile Gly Thr Pro Gly Gln Gly Ile Gln Ser Thr Tyr Ala Leu
            500                 505                 510
Leu Ala Asn Ser Gly Gly Leu Arg Leu Gly Met Gly Gly Leu Thr Ser
        515                 520                 525
Gly Gly Glu Thr Ala Val Ser Ser Val Asn Ala Ala Pro Thr Pro Gly
    530                 535                 540
Pro Val Arg Phe Val
545
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<210> 3
<211> 1723
<212> DNA
<213> Escherichia coli

<400> 3

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ccgttgggat ctcgtgcgct atttacgcct gtaaggaatt ctatggctga ttctggcgac 180
aatcgtgcca gtgatgttcc tggacttcct gtaaatccga tgcgcctggc ggcgtctgag 240
ataacactga atgatggatt tgaagttctt catgatcatg gtccgctcga tactcttaac 300
aggcagattg gctcttcggt atttcgagtt gaaactcagg aagatggtaa acatattgct 360
gtcggtcaga ggaatggtgt tgagacctct gttgttttaa gtgatcaaga gtacgctcgc 420
ttgcagtcca ttgatcctga aggtaaagac aaatttgtat ttactggagg ccgtggtggt 480
gctgggcatg ctatggtcac cgttgcttca gatatcacgg aagcccgcca aaggatactg 540
gagctgttag agcccaaagg gaccggggag tccaaaggtg ctggggagtc aaaaggcgtt 600
ggggagttga gggagtcaaa tagcggtgcg gaaaacacca cagaaactca gacctcaacc 660
tcaacttcca gccttcgttc agatcctaaa ctttggttgg cgttggggac tgttgctaca 720
ggtctgatag ggttggcggc gacgggtatt gtacaggcgc ttgcattgac gccggagccg 780
gatagcccaa ccacgaccga ccctgatgca gctgcaagtg caactgaaac tgcgacaaga 840
gatcagttaa cgaaagaagc gttccagaac ccagataatc aaaaagttaa tatcgatgag 900
ctcggaaatg cgattccgtc aggggtattg aaagatgatg ttgttgcgaa tatagaagag 960
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caggctaaag cagcaggcga agaggccaaa cagcaagcca ttgaaaataa tgctcaggcg 1020
caaaaaaaat atgatgaaca acaagctaaa cgccaggagg agctgaaagt ttcatcgggg 1080
gctggctacg gtcttagtgg cgcattgatt cttggtgggg gaattggtgt tgccgtcacc 1140
gctgcgcttc atcgaaaaaa tcagccggta gaacaaacaa caacaactac tactacaact 1200
acaactacaa gcgcacgtac ggtagagaat aagcctgcaa ataatacacc tgcacagggc 1260
aatgtagata cccctgggtc agaagatacc atggagagca gacgtagctc gatggctagc 1320
acctcgtcga ctttctttga cacttccagc atagggaccg tgcagaatcc gtatgctgat 1380
gttaaaacat cgctgcatga ttcgcaggtg ccgacttcta attctaatac gtctgttcag 1440
aatatgggga atacagattc tgttgtatat agcaccattc aacatcctcc ccgggatact 1500
actgataacg gcgcacggtt attaggaaat ccaagtgcgg ggattcaaag cacttatgcg 1560
cgtctggcgc taagtggtgg attacgccat gacatgggag gattaacggg ggggagtaat 1620
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<210> 4
<211> 559
<212> PRT
<213> Escherichia coli

<400> 4
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            20   25   30
Gly Gln Leu Ile Asn Ser Thr Gly Pro Leu Gly Ser Arg Ala Leu Phe
        35   40   45
Thr Pro Val Arg Asn Ser Met Ala Asp Ser Gly Asp Asn Arg Ala Ser
    50   55   60
Asp Val Pro Gly Leu Pro Val Asn Pro Met Arg Leu Ala Ala Ser Glu
65   70   75   80
Ile Thr Leu Asn Asp Gly Phe Glu Val Leu His Asp His Gly Pro Leu
                85   90   95
Asp Thr Leu Asn Arg Gln Ile Gly Ser Ser Val Phe Arg Val Glu Thr
            100   105   110
Gln Glu Asp Gly Lys His Ile Ala Val Gly Gln Arg Asn Gly Val Glu
        115   120   125
Thr Ser Val Val Leu Ser Asp Gln Glu Tyr Ala Arg Leu Gln Ser Ile
    130   135   140
Asp Pro Glu Gly Lys Asp Lys Phe Val Phe Thr Gly Gly Arg Gly Gly
145   150   155   160
Ala Gly His Ala Met Val Thr Val Ala Ser Asp Ile Thr Glu Ala Arg
                165   170   175
Gln Arg Ile Leu Glu Leu Leu Glu Pro Lys Gly Thr Gly Glu Ser Lys
            180   185   190
Gly Ala Gly Glu Ser Lys Gly Val Gly Glu Leu Arg Glu Ser Asn Ser
        195   200   205
Gly Ala Glu Asn Thr Thr Glu Thr Gln Thr Ser Thr Ser Thr Ser Ser
    210   215   220
Leu Arg Ser Asp Pro Lys Leu Trp Leu Ala Leu Gly Thr Val Ala Thr
225   230   235   240
Gly Leu Ile Gly Leu Ala Ala Thr Gly Ile Val Gln Ala Leu Ala Leu
                245   250   255
Thr Pro Glu Pro Asp Ser Pro Thr Thr Thr Asp Pro Asp Ala Ala Ala
            260   265   270
Ser Ala Thr Glu Thr Ala Thr Arg Asp Gln Leu Thr Lys Glu Ala Phe

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        275                 280                 285
Gln Asn Pro Asp Asn Gln Lys Val Asn Ile Asp Glu Leu Gly Asn Ala
    290                 295                 300
Ile Pro Ser Gly Val Leu Lys Asp Asp Val Val Ala Asn Ile Glu Glu
305                 310                 315                 320
Gln Ala Lys Ala Ala Gly Glu Glu Ala Lys Gln Gln Ala Ile Glu Asn
                325                 330                 335
Asn Ala Gln Ala Gln Lys Lys Tyr Asp Glu Gln Gln Ala Lys Arg Gln
            340                 345                 350
Glu Glu Leu Lys Val Ser Ser Gly Ala Gly Tyr Gly Leu Ser Gly Ala
        355                 360                 365
Leu Ile Leu Gly Gly Gly Ile Gly Val Ala Val Thr Ala Ala Leu His
    370                 375                 380
Arg Lys Asn Gln Pro Val Glu Gln Thr Thr Thr Thr Thr Thr Thr Thr
385                 390                 395                 400
Thr Thr Thr Ser Ala Arg Thr Val Glu Asn Lys Pro Ala Asn Asn Thr
                405                 410                 415
Pro Ala Gln Gly Asn Val Asp Thr Pro Gly Ser Glu Asp Thr Met Glu
            420                 425                 430
Ser Arg Arg Ser Ser Met Ala Ser Thr Ser Ser Thr Phe Phe Asp Thr
        435                 440                 445
Ser Ser Ile Gly Gly Pro Cys Arg Ile Arg Met Leu Met Leu Lys His
    450                 455                 460
Arg Cys Met Ile Arg Arg Cys Arg Leu Leu Ile Leu Ile Arg Leu Phe
465                 470                 475                 480
Arg Ile Trp Gly Ile Gln Ile Ser Val Val Tyr Ser Thr Ile Gln His
                485                 490                 495
Pro Pro Arg Asp Thr Thr Asp Asn Gly Ala Arg Leu Leu Gly Asn Pro
            500                 505                 510
Ser Ala Gly Ile Gln Ser Thr Tyr Ala Arg Leu Ala Leu Ser Gly Gly
        515                 520                 525
Leu Arg His Asp Met Gly Gly Leu Thr Gly Gly Ser Asn Ser Ala Val
    530                 535                 540
Asn Thr Ser Asn Asn Pro Pro Ala Pro Gly Ser His Arg Phe Val
545                 550                 555
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<210> 5
<211> 1460
<212> DNA
<213> Escherichia coli

<400> 5

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cgggatgatg gcagccatgt tgctatcggg caaaaaaatg gcctcgagac cactgttgtt 240
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gtatttactg gaggccgcgg tggcccaggg catgctatgg tcacggttgc ttcagatatc 360
gccgaagccc gtcagaggat aatagataaa ttagaaccaa aggatacaaa ggagacgaag 420
gagccagggg atccaaatag tggcgaggga aaaatcattg aaattcatac ctcaacctca 480
acttctagcc tccgtgcaga tcctaaactt tggttgtcat tggggactat tgctgcaggt 540
ctgataggga tggctgcgac ggggattgca caggctgttg cgttgactcc agagccggat 600
gacccaatca ctaccgaccc tgatgctgca gcaaacacag ctgaagcagc ggcaaaagat 660
cagttaacga aagaagcatt ccagaaccca gataaccaga aagttaatat cgatgagaac 720
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<210> 6
<211> 484
<212> PRT
<213> Escherichia coli

<400> 6

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            20                  25                  30
Gly Ala Leu Glu Val Leu His Asp Lys Gly Gly Leu Asp Thr Leu Asn
        35                  40                  45
Ser Ala Ile Gly Ser Ser Leu Phe Arg Val Glu Thr Arg Asp Asp Gly
    50                  55                  60
Ser His Val Ala Ile Gly Gln Lys Asn Gly Leu Glu Thr Thr Val Val
65                  70                  75                  80
Leu Ser Glu Gln Glu Phe Ser Ser Leu Gln Ser Leu Asp Pro Glu Gly
                85                  90                  95
Lys Asn Lys Phe Val Phe Thr Gly Gly Arg Gly Gly Pro Gly His Ala
            100                 105                 110
Met Val Thr Val Ala Ser Asp Ile Ala Glu Ala Arg Gln Arg Ile Ile
        115                 120                 125
Asp Lys Leu Glu Pro Lys Asp Thr Lys Glu Thr Lys Glu Pro Gly Asp
    130                 135                 140
Pro Asn Ser Gly Glu Gly Lys Ile Ile Glu Ile His Thr Ser Thr Ser
145                 150                 155                 160
Thr Ser Ser Leu Arg Ala Asp Pro Lys Leu Trp Leu Ser Leu Gly Thr
                165                 170                 175
Ile Ala Ala Gly Leu Ile Gly Met Ala Ala Thr Gly Ile Ala Gln Ala
            180                 185                 190
Val Ala Leu Thr Pro Glu Pro Asp Asp Pro Ile Thr Thr Asp Pro Asp
        195                 200                 205
Ala Ala Ala Asn Thr Ala Glu Ala Ala Ala Lys Asp Gln Leu Thr Lys
    210                 215                 220
Glu Ala Phe Gln Asn Pro Asp Asn Gln Lys Val Asn Ile Asp Glu Asn
225                 230                 235                 240
Gly Asn Ala Ile Pro Ser Gly Glu Leu Lys Asp Asp Val Val Ala Gln
                245                 250                 255
Ile Ala Glu Gln Ala Lys Ala Ala Gly Glu Gln Ala Arg Gln Glu Ala
            260                 265                 270
Ile Glu Ser Asn Ser Gln Ala Gln Gln Lys Tyr Asp Glu Gln His Ala
```

```
        275                 280                 285
Lys Arg Glu Gln Glu Met Ser Leu Ser Ser Gly Val Gly Tyr Gly Ile
    290                 295                 300
Ser Gly Ala Leu Ile Leu Gly Gly Gly Ile Gly Ala Gly Val Thr Ala
305                 310                 315                 320
Ala Leu His Arg Lys Asn Gln Pro Ala Glu Gln Thr Ile Thr Thr Arg
                325                 330                 335
Thr Val Val Asp Asn Gln Pro Thr Asn Asn Ala Ser Ala Gln Gly Asn
            340                 345                 350
Thr Asp Thr Ser Gly Pro Glu Glu Ser Pro Ala Ser Arg Arg Asn Ser
        355                 360                 365
Asn Ala Ser Leu Ala Ser Asn Gly Ser Asp Thr Ser Ser Thr Gly Thr
    370                 375                 380
Val Glu Asn Pro Tyr Ala Asp Val Gly Met Pro Arg Asn Asp Ser Leu
385                 390                 395                 400
Ala Arg Ile Ser Glu Glu Pro Ile Tyr Asp Glu Val Ala Ala Asp Pro
                405                 410                 415
Asn Tyr Ser Val Ile Gln His Phe Ser Gly Asn Ser Pro Val Thr Gly
            420                 425                 430
Arg Leu Val Gly Thr Pro Gly Gln Gly Ile Gln Ser Thr Tyr Ala Leu
        435                 440                 445
Leu Ala Ser Ser Gly Gly Leu Arg Leu Gly Met Gly Gly Leu Thr Gly
    450                 455                 460
Gly Gly Glu Ser Ala Val Ser Thr Ala Asn Ala Ala Thr Pro Gly Pro
465                 470                 475                 480
Ala Arg Phe Val
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<210> 7
<211> 30
<212> PRT
<213> Escherichia coli

<400> 7

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Pro Ile Gly Asn Leu Gly Asn Asn Val Asn Gly Asn His Leu Ile Pro
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Pro Ala Pro Pro Leu Pro Ser Gln Thr Asp Gly Ala Ala Arg
            20                  25                  30
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<210> 8
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 8
aaagtcgaca agaacctgag aaccag 26

<210> 9
<211> 30
<212> DNA

<213> Artificial Sequence

<220>
<223> Primer

<400> 9
tttgtcgact tatgtttgtg aaggtagtgg 30

<210> 10
<211> 549
<212> PRT
<213> Escherichia coli

<400> 10
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1 5 10 15
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20 25 30
Gly Thr Gly His Leu Ile Ser Ser Thr Gly Ala Leu Gly Ser Arg Ser
35 40 45
Leu Phe Ser Pro Leu Arg Asn Ser Met Ala Asp Ser Val Asp Ser Arg
50 55 60
Asp Ile Pro Gly Leu Pro Thr Asn Pro Ser Arg Leu Ala Ala Ala Thr
65 70 75 80
Ser Glu Thr Cys Leu Leu Gly Gly Phe Glu Val Leu His Asp Lys Gly
85 90 95
Pro Leu Asp Ile Leu Asn Thr Gln Ile Gly Pro Ser Ala Phe Arg Val
100 105 110
Glu Val Gln Ala Asp Gly Thr His Ala Ala Ile Gly Glu Lys Asn Gly
115 120 125
Leu Glu Val Ser Val Thr Leu Ser Pro Gln Glu Trp Ser Ser Leu Gln
130 135 140
Ser Ile Asp Thr Glu Gly Lys Asn Arg Phe Val Phe Thr Gly Gly Arg
145 150 155 160
Gly Gly Ser Gly His Pro Met Val Thr Val Ala Ser Asp Ile Ala Glu
165 170 175
Ala Arg Thr Lys Ile Leu Ala Lys Leu Asp Pro Asp Asn His Gly Gly
180 185 190
Arg Gln Pro Lys Asp Val Asp Thr Arg Ser Val Gly Val Gly Ser Ala
195 200 205
Ser Gly Ile Asp Asp Gly Val Val Ser Glu Thr His Thr Ser Thr Thr
210 215 220
Asn Ser Ser Val Arg Ser Asp Pro Lys Phe Trp Val Ser Val Gly Ala
225 230 235 240
Ile Ala Ala Gly Leu Ala Gly Leu Ala Ala Thr Gly Ile Ala Gln Ala
245 250 255
Leu Ala Leu Thr Pro Glu Pro Asp Asp Pro Thr Thr Thr Asp Pro Asp
260 265 270
Gln Ala Ala Asn Ala Ala Glu Ser Ala Thr Lys Asp Gln Leu Thr Gln
275 280 285
Glu Ala Phe Lys Asn Pro Glu Asn Gln Lys Val Asn Ile Asp Ala Asn
290 295 300
Gly Asn Ala Ile Pro Ser Gly Glu Leu Lys Asp Asp Ile Val Glu Gln
305 310 315 320
Ile Ala Gln Gln Ala Lys Glu Ala Gly Glu Val Ala Arg Gln Gln Ala

```
                325                 330                 335
Val Glu Ser Asn Ala Gln Ala Gln Gln Arg Tyr Glu Asp Gln His Ala
            340                 345                 350
Arg Arg Gln Glu Glu Leu Gln Leu Ser Ser Gly Ile Gly Tyr Gly Leu
        355                 360                 365
Ser Ser Ala Leu Ile Val Ala Gly Gly Ile Gly Ala Gly Val Thr Thr
    370                 375                 380
Ala Leu His Arg Arg Asn Gln Pro Ala Glu Gln Thr Thr Thr Thr Thr
385                 390                 395                 400
Thr His Thr Val Val Gln Gln Gln Thr Gly Gly Ile Pro Gln His Lys
                405                 410                 415
Val Ala Leu Met Pro Gln Glu Arg Arg Arg Phe Ser Asp Arg Arg Asp
            420                 425                 430
Ser Gln Gly Ser Val Ala Ser Thr His Trp Ser Asp Ser Ser Ser Glu
        435                 440                 445
Val Val Asn Pro Tyr Ala Glu Val Gly Gly Ala Arg Asn Ser Leu Ser
    450                 455                 460
Ala His Gln Pro Glu Glu His Ile Tyr Asp Glu Val Ala Ala Asp Pro
465                 470                 475                 480
Gly Tyr Ser Val Ile Gln Asn Phe Ser Gly Ser Gly Pro Val Thr Gly
                485                 490                 495
Arg Leu Ile Gly Thr Pro Gly Gln Gly Ile Gln Ser Thr Tyr Ala Leu
            500                 505                 510
Leu Ala Asn Ser Gly Gly Leu Arg Leu Gly Met Gly Gly Leu Thr Ser
        515                 520                 525
Gly Gly Glu Thr Ala Val Ser Ser Val Asn Ala Ala Pro Thr Gln Gly
    530                 535                 540
Pro Val Arg Phe Val
545
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<210> 11
<211> 558
<212> PRT
<213> Escherichia coli

<400> 11

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Met Pro Ile Gly Asn Leu Gly His Asn Pro Asn Val Asn Asn Ser Ile
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Pro Pro Ala Pro Pro Leu Pro Ser Gln Thr Asp Gly Ala Gly Gly Arg
            20                  25                  30
Gly Gln Leu Ile Asn Ser Thr Gly Pro Leu Gly Ser Arg Ala Leu Phe
        35                  40                  45
Thr Pro Val Arg Asn Ser Met Ala Asp Ser Gly Asp Asn Arg Ala Ser
    50                  55                  60
Asp Val Pro Gly Leu Pro Val Asn Pro Met Arg Leu Ala Ala Ser Glu
65                  70                  75                  80
Ile Thr Leu Asn Asp Gly Phe Glu Val Leu His Asp His Gly Pro Leu
                85                  90                  95
Asp Thr Leu Asn Arg Gln Ile Gly Ser Ser Val Phe Arg Val Glu Thr
            100                 105                 110
Gln Glu Asp Gly Lys His Ile Ala Val Gly Gln Arg Asn Gly Val Glu
        115                 120                 125
Thr Ser Val Val Leu Ser Asp Gln Glu Tyr Ala Arg Leu Gln Ser Ile
    130                 135                 140
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Asp Pro Glu Gly Lys Asp Lys Phe Val Phe Thr Gly Gly Arg Gly Gly
145                 150                 155                 160
Ala Gly His Ala Met Val Thr Val Ala Ser Asp Ile Thr Glu Ala Arg
                165                 170                 175
Gln Arg Ile Leu Glu Leu Leu Glu Pro Lys Gly Thr Gly Glu Ser Lys
            180                 185                 190
Gly Ala Gly Glu Ser Lys Gly Val Gly Glu Leu Arg Glu Ser Asn Ser
        195                 200                 205
Gly Ala Glu Asn Thr Thr Glu Thr Gln Thr Ser Thr Ser Thr Ser Ser
    210                 215                 220
Leu Arg Ser Asp Pro Lys Leu Trp Leu Ala Leu Gly Thr Val Ala Thr
225                 230                 235                 240
Gly Leu Ile Gly Leu Ala Ala Thr Gly Ile Val Gln Ala Leu Ala Leu
                245                 250                 255
Thr Pro Glu Pro Asp Ser Pro Thr Thr Thr Asp Pro Asp Ala Ala Ala
            260                 265                 270
Ser Ala Thr Glu Thr Ala Thr Arg Asp Gln Leu Thr Lys Glu Ala Phe
        275                 280                 285
Gln Asn Pro Asp Asn Gln Lys Val Asn Ile Asp Glu Leu Gly Asn Ala
    290                 295                 300
Ile Pro Ser Gly Val Leu Lys Asp Asp Val Val Ala Asn Ile Glu Glu
305                 310                 315                 320
Gln Ala Lys Ala Ala Gly Glu Glu Ala Lys Gln Gln Ala Ile Glu Asn
                325                 330                 335
Asn Ala Gln Ala Gln Lys Lys Tyr Asp Glu Gln Gln Ala Lys Arg Gln
            340                 345                 350
Glu Glu Leu Lys Val Ser Ser Gly Ala Gly Tyr Gly Leu Ser Gly Ala
        355                 360                 365
Leu Ile Leu Gly Gly Gly Ile Gly Val Ala Val Thr Ala Ala Leu His
    370                 375                 380
Arg Lys Asn Gln Pro Val Glu Gln Thr Thr Thr Thr Thr Thr Thr Thr
385                 390                 395                 400
Thr Thr Thr Ser Ala Arg Thr Val Glu Asn Lys Pro Ala Asn Asn Thr
                405                 410                 415
Pro Ala Gln Gly Asn Val Asp Thr Pro Gly Ser Glu Asp Thr Met Glu
            420                 425                 430
Ser Arg Arg Ser Ser Met Ala Ser Thr Ser Ser Thr Phe Phe Asp Thr
        435                 440                 445
Ser Ser Ile Gly Thr Val Gln Asn Pro Tyr Ala Asp Val Lys Thr Ser
    450                 455                 460
Leu His Asp Ser Gln Val Pro Thr Ser Asn Ser Asn Thr Ser Val Gln
465                 470                 475                 480
Asn Met Gly Asn Thr Asp Ser Val Val Tyr Ser Thr Ile Gln His Pro
                485                 490                 495
Pro Arg Asp Thr Thr Asp Asn Gly Ala Arg Leu Leu Gly Asn Pro Ser
            500                 505                 510
Ala Gly Ile Gln Ser Thr Tyr Ala Arg Leu Ala Leu Ser Gly Gly Leu
        515                 520                 525
Arg His Asp Met Gly Gly Leu Thr Gly Gly Ser Asn Ser Ala Val Asn
    530                 535                 540
Thr Ser Asn Asn Pro Pro Ala Pro Gly Ser His Arg Phe Val
545                 550                 555
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<210> 12

<211> 485
<212> PRT
<213> Escherichia coli

<400> 12

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Asn Ser Val Ala Asp Ala Ala Asp Ser Arg Ala Ser Asp Ile Pro Gly
 1               5                  10                  15
Leu Pro Thr Asn Pro Leu Arg Phe Ala Ala Ser Glu Val Ser Leu His
            20                  25                  30
Gly Ala Leu Glu Val Leu His Asp Lys Gly Gly Leu Asp Thr Leu Asn
        35                  40                  45
Ser Ala Ile Gly Ser Ser Leu Phe Arg Val Glu Thr Arg Asp Asp Gly
    50                  55                  60
Ser His Val Ala Ile Gly Gln Lys Asn Gly Leu Glu Thr Thr Val Val
65                  70                  75                  80
Leu Ser Glu Gln Glu Phe Ser Ser Leu Gln Ser Leu Asp Pro Glu Gly
                85                  90                  95
Lys Asn Lys Phe Val Phe Thr Gly Gly Arg Gly Gly Pro Gly His Ala
            100                 105                 110
Met Val Thr Val Ala Ser Asp Ile Ala Glu Ala Arg Gln Arg Ile Ile
        115                 120                 125
Asp Lys Leu Glu Pro Lys Asp Thr Lys Glu Thr Lys Glu Pro Gly Asp
    130                 135                 140
Pro Asn Ser Gly Glu Gly Lys Ile Ile Glu Ile His Thr Ser Thr Ser
145                 150                 155                 160
Thr Ser Ser Leu Arg Ala Asp Pro Lys Leu Trp Leu Ser Leu Gly Thr
                165                 170                 175
Ile Ala Ala Gly Leu Ile Gly Met Ala Ala Thr Gly Ile Ala Gln Ala
            180                 185                 190
Val Ala Leu Thr Pro Glu Pro Asp Asp Pro Ile Thr Thr Asp Pro Asp
        195                 200                 205
Ala Ala Ala Asn Thr Ala Glu Ala Ala Ala Lys Asp Gln Leu Thr Lys
    210                 215                 220
Glu Ala Phe Gln Asn Pro Asp Asn Gln Lys Val Asn Ile Asp Glu Asn
225                 230                 235                 240
Gly Asn Ala Ile Pro Ser Gly Glu Leu Lys Asp Asp Val Val Ala Gln
                245                 250                 255
Ile Ala Glu Gln Ala Lys Ala Ala Gly Glu Gln Ala Arg Gln Glu Ala
            260                 265                 270
Ile Glu Ser Asn Ser Gln Ala Gln Gln Lys Tyr Asp Glu Gln His Ala
        275                 280                 285
Lys Arg Glu Gln Glu Met Ser Leu Ser Ser Gly Val Gly Tyr Gly Ile
    290                 295                 300
Ser Gly Ala Leu Ile Leu Gly Gly Gly Ile Gly Ala Gly Val Thr Ala
305                 310                 315                 320
Ala Leu His Arg Lys Asn Gln Pro Ala Glu Gln Thr Ile Thr Thr Arg
                325                 330                 335
Thr Val Val Asp Asn Gln Pro Thr Asn Asn Ala Ser Ala Gln Gly Asn
            340                 345                 350
Thr Asp Thr Ser Gly Pro Glu Glu Ser Pro Ala Ser Arg Arg Asn Ser
        355                 360                 365
Asn Ala Ser Leu Ala Ser Asn Gly Ser Asp Thr Ser Ser Thr Gly Thr
    370                 375                 380
Val Glu Asn Pro Tyr Ala Asp Val Gly Met Pro Arg Asn Asp Ser Leu
385                 390                 395                 400
```

```
Ala Arg Ile Ser Glu Glu Pro Ile Tyr Asp Glu Val Ala Ala Asp Pro
                405                 410                 415
Asn Tyr Ser Val Ile Gln His Phe Ser Gly Asn Ser Pro Val Thr Gly
            420                 425                 430
Arg Leu Val Gly Thr Pro Gly Gln Gly Ile Gln Ser Thr Tyr Ala Leu
        435                 440                 445
Leu Ala Ser Ser Gly Gly Leu Arg Leu Gly Met Gly Gly Leu Thr Gly
    450                 455                 460
Gly Gly Glu Ser Ala Val Ser Thr Ala Asn Ala Ala Pro Thr Pro Gly
465                 470                 475                 480
Pro Ala Arg Phe Val
                485
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<210> 13
<211> 22
<212> PRT
<213> Escherichia coli

<400> 13

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Met Ser Ser Arg Ser Glu Leu Leu Leu Asp Arg Phe Ala Glu Lys Ile
 1               5                  10                  15
Gly Val Gly Ser Ile Ser
            20
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